衞生防護中心
Centre for Health Protection

Antimicrobial Use (AMU) Surveillance in Public Hospitals and Clinics - Hospital Authority Antimicrobials Dispensing Data (2018)

Infection Control Branch
Centre for Health Protection

Dec 2020

衞生署
Department of Health

Background

- The Hong Kong Strategy and Action Plan on Antimicrobial Resistance 2017-2022 was issued in July 2017
- Activity 3.2.1 suggests collecting antibiotic dispensing data from Hospital Authority (HA) and monitor antibiotic use in public hospitals and clinics
- In collaborating with HA, the Department of Health (DH) collected the HA dispensing data and published the first "Summary Report on Antimicrobials Dispensed in Public Hospitals, 2014-2016" in October 2019 in CHP website
- Since the Action Plan was published in 2017, data of 2016 has been selected as the baseline for comparison

Data Scopes

- Collected data were grouped in accordance with the services and specialties provided by HA
  - Non-inpatient services
    - Accident and Emergency (A&E)
    - Primary Care (GOPC), and
    - Specialist Out-patient (Clinical)
  - Inpatient services
    - Medicine
    - Surgery
    - Orthopaedics and Traumatology
    - Intensive Care Unit/High Dependency Unit (ICU/HDU), and
    - Others
- Service statistics for various specialties were also obtained from the Strategy and Planning Division of HA

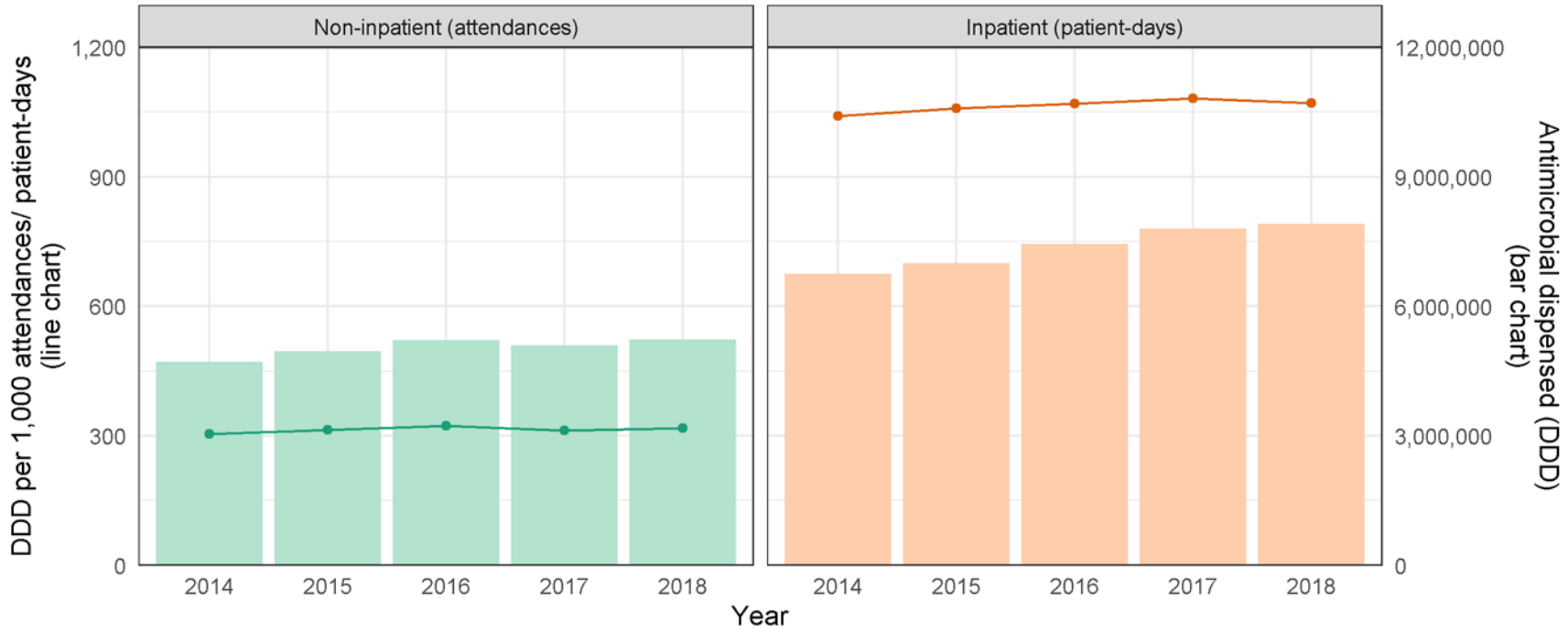
Methodology and Analysis

- Dispensing data covering the items in section 5.1 of the British National Formulary (BNF), namely, Antibacterial Drugs, were extracted from the HA dispensing system
- Relevant items under the following classes of the World Health Organization (WHO) Anatomical Therapeutic Chemical (ATC) classification system were included in the surveillance:
  - J01 (Antibacterials for systemic use);
  - A07AA (Antibiotics for alimentary tract); and
  - P01AB (Nitroimidazole derivatives for protozoal diseases)
- Some selected broad spectrum antimicrobials dispensed to various specialties were also examined because of their importance for treatment of resistant infections in human

Methodology and Analysis - Quantification of Antimicrobial Usage

- **Defined daily dose (DDD)**
  - Defined as the assumed average maintenance dose per day for a drug used for its main indication in adults
  - Commonly used across many overseas health authorities for comparison of drug usage
- **DDD per 1,000 patient-days**
  - A standardised unit commonly used internationally to measure drug used in inpatient service
- **DDD per 1,000 attendances**
  - A standardised unit commonly used internationally to measure drug used in non-inpatient service
- Antimicrobials dispensed for non-inpatient and inpatient services would be examined separately because these services have different presentation of service volume

Results (1) - Overall Antimicrobials Dispensing



Year	Non-inpatient Service			Inpatient Service		
	Service Volume[*†]	Antimicrobial Dispensed[†‡]	DDD per 1,000 attendances[§¶]	Service Volume[†**]	Antimicrobial Dispensed[†‡]	DDD per 1,000 patient-days[§¶]
2016	16,095,000	5,209,000	323.65	6,967,000	7,450,000	1,069.38
2017	16,292,000	5,090,000	312.40	7,214,000	7,803,000	1,081.69
2018	16,416,000	5,222,000	318.13	7,390,000	7,909,000	1,070.32

[*] In terms of attendances
[†] Rounded to the nearest thousand
[‡] In terms of DDD
[§] Rounded to two decimal places
[¶] Due to rounding, figures may not precisely reflect the absolute figures
[**] In terms of patient-days

衞生署
Department of Health

Results (2) - Overall Antimicrobials Dispensing

- The overall dispensed quantity of antimicrobials in HA (in terms of DDD) increased from 2016 to 2018
- However when service volume is taken into account, the dispensed quantity in non-inpatient service decreased by -5.52 DDD/ 1,000 attendances (-1.70%) while the dispensed quantity in inpatient service increased by 0.93 DDD/ 1,000 patient-days (0.09%)

Results (3) - Five Most Dispensed Antimicrobial Groups in Public Hospitals and Clinics

ATC Pharmacological Subgroup		Antimicrobial dispensed in DDD			
Code	Description	Year 2016*	Year 2017*	Year 2018*	Percentage change (2018 over 2016)†‡
J01C	Beta-lactam antibacterials, penicillins	8,168,000	8,313,000	8,377,000	2.56%
J01M	Quinolone antibacterials	1,011,000	1,027,000	1,045,000	3.32%
J01D	Other beta-lactam antibacterials	928,000	895,000	943,000	1.60%
J01F	Macrolides, lincosamides and streptogramins	955,000	933,000	882,000	-7.59%
J01A	Tetracyclines	643,000	747,000	873,000	35.75%
	Others	954,000	977,000	1,011,000	6.03%
	Total	12,659,000	12,893,000	13,132,000	3.73%

Note:
The five most dispensed antimicrobial groups were identified from year 2018 data

*Rounded to nearest thousand

†Rounded to two decimal places

‡Due to rounding, percentages may not precisely reflect the absolute figures

- The five most dispensed antimicrobial groups, categorized according to WHO ATC, contain antimicrobials commonly prescribed as empirical treatment for suspected bacterial infections
- In 2018, tetracyclines group was the one with the most obvious increase (35.75%, vs 2016)

Results (4) - Ten Most Dispensed Antimicrobials in Public Hospitals and Clinics

ATC Chemical Substance		Antimicrobial dispensed in DDD			
Code	Description	Year 2016*	Year 2017*	Year 2018*	Percentage change (2018 over 2016)†‡
J01CR02	Amoxicillin/clavulanate	6,339,000	6,565,000	6,769,000	6.80%
J01AA02	Doxycycline	575,000	671,000	801,000	39.38%
J01MA12	Levofloxacin	734,000	758,000	779,000	6.14%
J01FA09	Clarithromycin	583,000	540,000	500,000	-14.28%
J01CA04	Amoxicillin	449,000	441,000	435,000	-3.08%
J01CR05	Piperacillin/tazobactam	347,000	385,000	409,000	17.85%
J01CF02	Cloxacillin	515,000	455,000	372,000	-27.84%
J01EE01	Co-trimoxazole	208,000	234,000	271,000	30.23%
J01CA01	Ampicillin	382,000	326,000	266,000	-30.36%
J01FA10	Azithromycin	240,000	270,000	260,000	8.12%
	Others	2,287,000	2,248,000	2,269,000	-0.78%
	Total	12,659,000	12,893,000	13,132,000	3.73%

Note:
The ten most dispensed antimicrobials were identified from year 2018 data

*Rounded to the nearest thousand

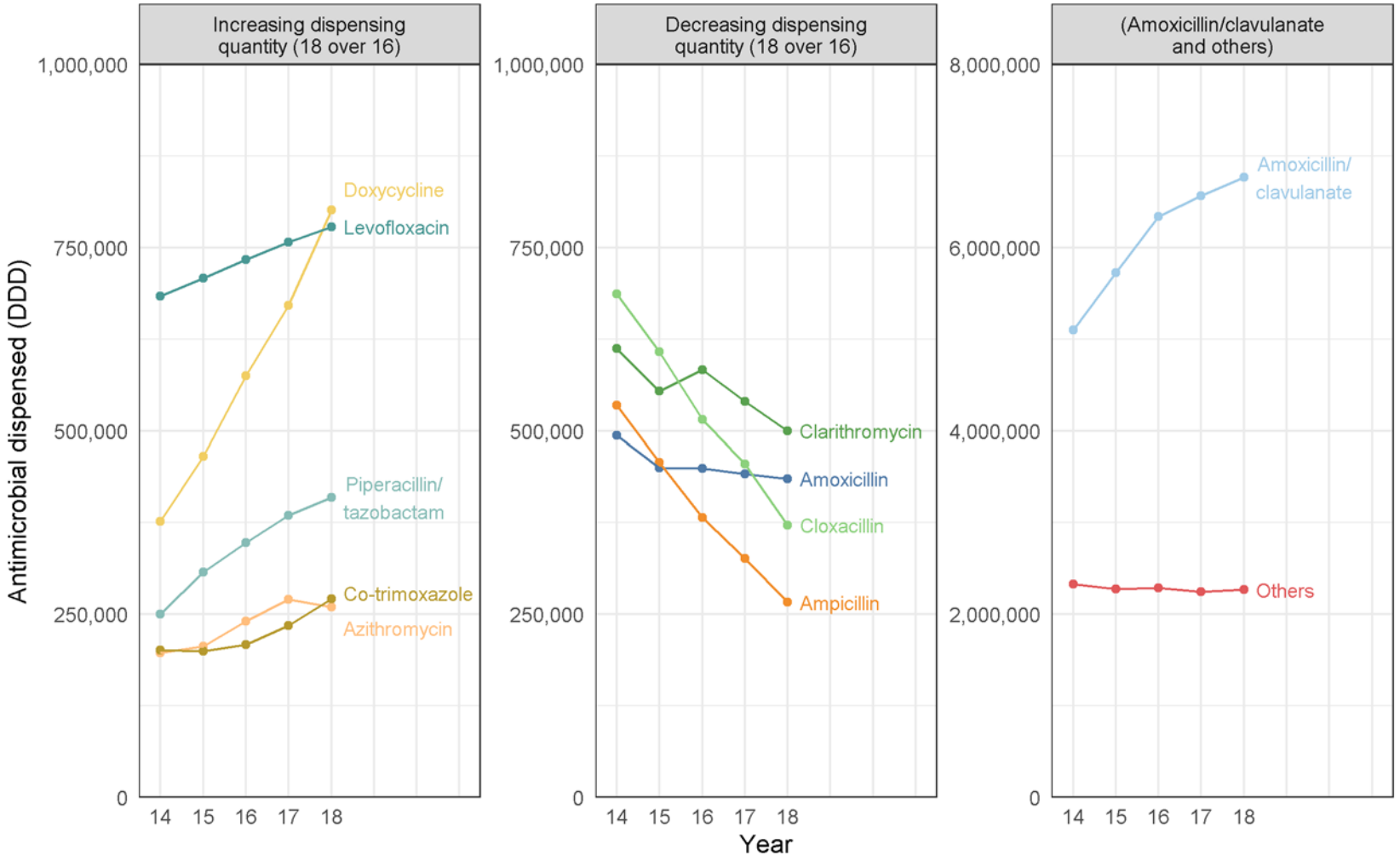
†Rounded to two decimal places

‡Due to rounding, percentages may not precisely reflect the absolute figures

衞生署
Department of Health

Results (5) - Ten Most Dispensed Antimicrobials in Public Hospitals and Clinics

衛生防護中心
Centre for Health Protection



衛生署
Department of Health

Discussion (1) - Antimicrobials Dispensed in HA Hospitals and Clinics

- Among the ten most dispensed antimicrobials in HA hospitals and clinics, amoxicillin/clavulanate has been by far the most dispensed item (51.55% of the overall quantity)
- Doxycycline increased most by percentage (39.38%), followed by co-trimoxazole (30.23%) and a broad spectrum antimicrobial piperacillin/tazobactam (17.85%) when compared with that of 2016
- Ampicillin and cloxacillin decreased most by percentage in the same period (-30.36% and -27.84% respectively)

Results (6) - Broad-spectrum Antimicrobials Dispensed in Public Hospitals and Clinics

	ATC Chemical Substance		Antimicrobial Dispensed in DDD			
	Code	**Description**	**Year 2016***	**Year 2017***	**Year 2018***	**Percentage change (2018 over 2016)†**
Beta-lactam Antibacterials, Penicillins	J01CR05	Piperacillin/tazobactam	347,000	385,000	409,000	17.85%
Other Beta-lactam Antibacterials (Cephalosporins)‡	J01DE01	Cefepime	23,000	27,000	35,000	50.73%
	J01DD62	Cefoperazone/sulbactam	31,000	28,000	29,000	-8.88%
	J01DD02	Ceftazidime	24,000	24,000	28,000	17.33%
	J01DI02	Ceftaroline fosamil	1,000	2,000	2,000	76.23%
	J01DI54	Ceftolozane/tazobactam	<500	<500	1,000	4756.00%
	J01DD52	Ceftazidime/avibactam	-	-	<500	-
Other Beta-lactam Antibacterials (Carbapenems)‡	J01DH02	Meropenem	182,000	204,000	256,000	40.57%
	J01DH03	Ertapenem	43,000	46,000	51,000	18.91%
	J01DH51	Imipenem/cilastatin	9,000	8,000	7,000	-26.87%
Other Antibacterials	J01XA01	Vancomycin	93,000	101,000	113,000	21.07%
	J01XX08	Linezolid	14,000	14,000	14,000	1.10%
	J01XB01	Colistin	14,000	13,000	12,000	-16.56%
	J01XX09	Daptomycin	6,000	8,000	9,000	46.04%
	J01XA02	Teicoplanin	<500	<500	<500	-91.02%
		Total	789,000	860,000	965,000	22.29%

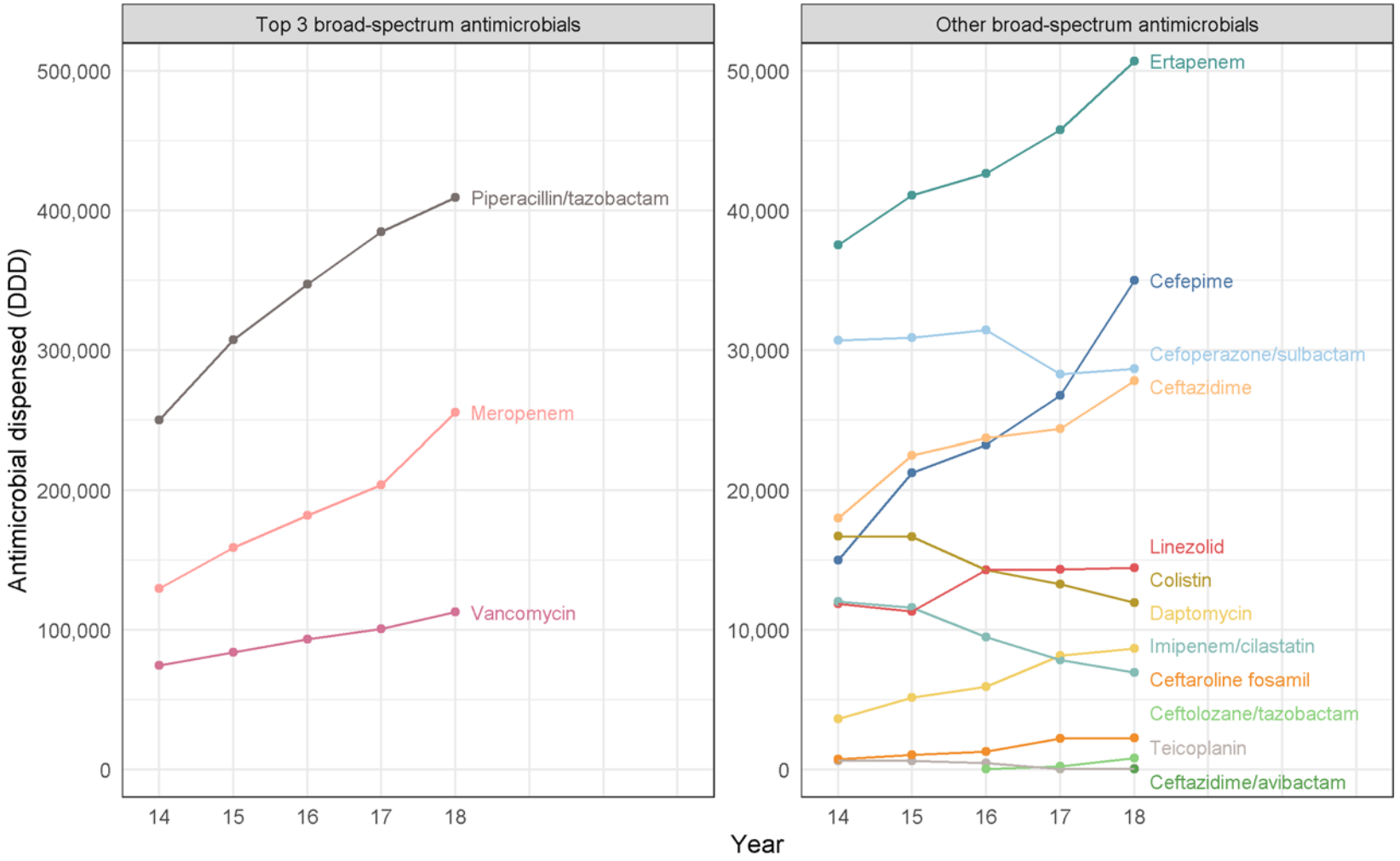
*Rounded to the nearest thousand

†Rounded to two decimal places

‡WHO ATC Pharmacological subgroup "other beta-lactam antibacterials (J01D)" is further categorized into cephalosporins and carbapenems groups

衞生署
Department of Health

Results (7) - Broad-spectrum Antimicrobials Dispensed in Public Hospitals and Clinics



Discussion (2) - Broad-spectrum Antimicrobials Dispensed in Public Hospitals and Clinics

- The 15 locally-important broad spectrum antimicrobials accounted for about 7.35% of the overall antimicrobials dispensed quantity in HA in 2018
- An overall increase of 22.29% was noted from 2016 to 2018
- Majority of them were prescribed in hospital setting
- The most dispensed broad spectrum antimicrobial was piperacillin/tazobactam (42.43% in 2018) and similar observation was noted in 2016 and 2017
- Most of the broad spectrum antimicrobials showed an increasing trend over the last few years, except teicoplanin, imipenem/cilastatin, colistin and cefoperazone/sulbactam

衛生防護中心 Centre for Health Protection

Results (8) - Non-inpatient Service by Speciality

Year		Primary Care (GOPC)	Specialist Out-patient (Clinical)	Accident & Emergency	All Non-inpatient Services
2016	Total DDD of antimicrobials dispensed*	1,658,000	1,884,000	1,668,000	5,209,000
	Total number of attendance*	6,360,000	7,476,000	2,260,000	16,095,000
	No. of attendance with antimicrobials dispensed*†	221,000	117,000	216,000	555,000
	Percentage of attendance with antimicrobials dispensed‡	3.48%	1.57%	9.57%	3.45%
	DDD per 1,000 attendances‡§¶	260.68	251.94	738.16	323.65
2017	Total DDD of antimicrobials dispensed*	1,590,000	1,932,000	1,568,000	5,090,000
	Total number of attendance*	6,400,000	7,695,000	2,197,000	16,292,000
	No. of attendance with antimicrobials dispensed*†	213,000	116,000	198,000	527,000
	Percentage of attendance with antimicrobials dispensed‡	3.33%	1.51%	9.03%	3.24%
	DDD per 1,000 attendances‡§¶	248.37	251.00	714.06	312.40
2018	Total DDD of antimicrobials dispensed*	1,611,000	2,044,000	1,568,000	5,222,000
	Total number of attendance*	6,401,000	7,870,000	2,146,000	16,416,000
	No. of attendance with antimicrobials dispensed*†	205,000	117,000	196,000	518,000
	Percentage of attendance with antimicrobials dispensed‡	3.21%	1.49%	9.13%	3.16%
	DDD per 1,000 attendances‡§¶	251.66	259.74	730.60	318.13
Percentage change (18 over 16)	Total DDD of antimicrobials dispensed‡§	-2.83%	8.52%	-6.02%	0.25%
	Total number of attendance‡§	0.65%	5.26%	-5.05%	1.99%
	No. of attendance with antimicrobials dispensed‡§	-7.37%	-0.23%	-9.43%	-6.66%
	Percentage of attendance with antimicrobials dispensed‡§	-7.97%	-5.22%	-4.62%	-8.49%
	DDD per 1,000 attendances‡§¶	-3.46%	3.10%	-1.03%	-1.70%

*Rounded to the nearest thousand

†Number of attendance with antimicrobials dispensed is defined as the annual sum of daily number of patient with antimicrobial dispensed in each cluster and each specialty

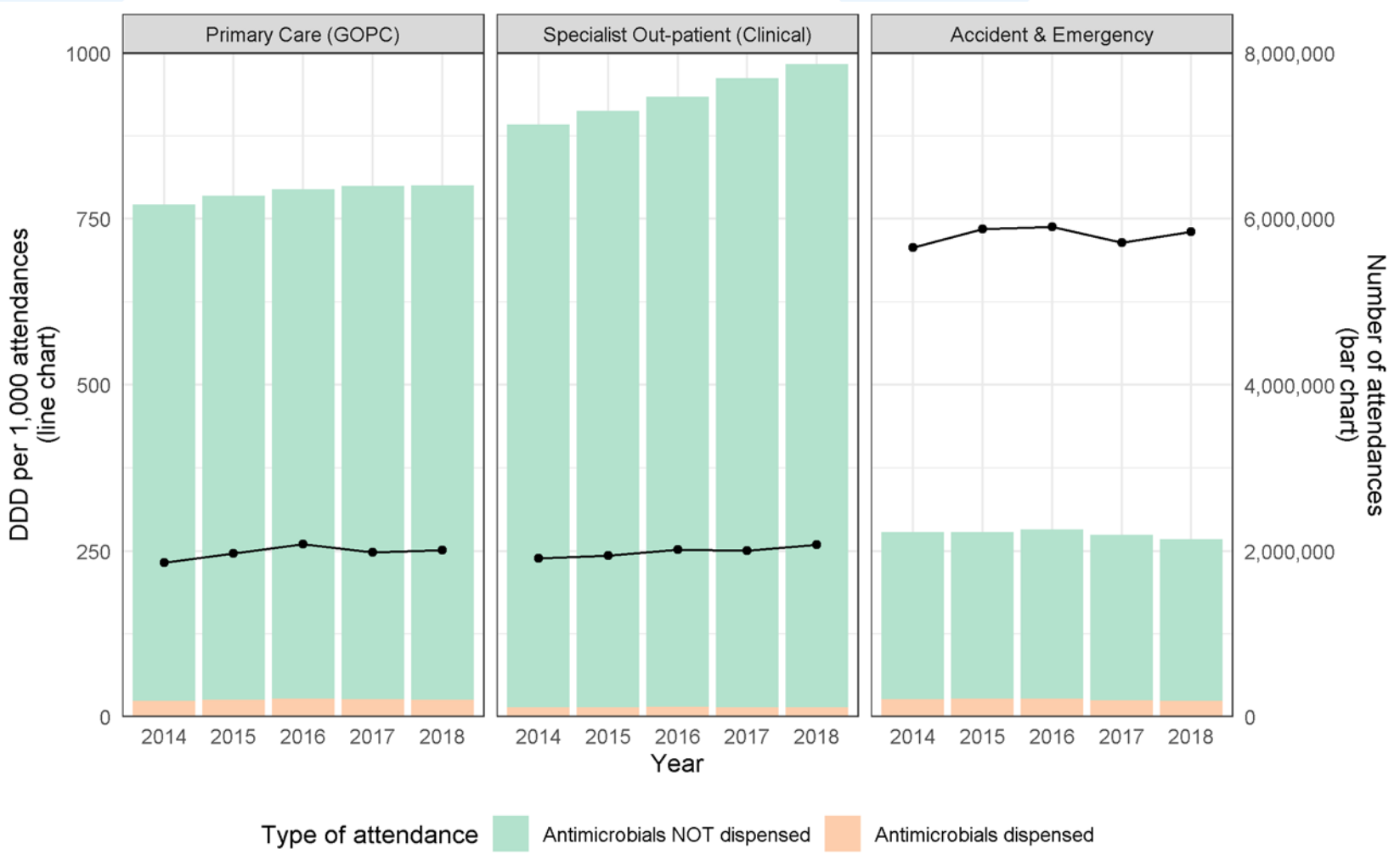
‡Rounded to two decimal places

§Due to rounding, figures may not precisely reflect the absolute figures

¶Attendance refers to total attendance

th

Results (9) - Non-inpatient Service by Speciality



Results (10) - Five Most Dispensed Antimicrobial Groups in Non-inpatient Service

ATC Pharmacological Subgroup		DDD per 1,000 attendances			
Code	Description	Year 2016*	Year 2017*	Year 2018*	Percentage change (2018 over 2016)*†
J01C	Beta-lactam antibacterials, penicillins	209.08	200.36	203.61	-2.62%
J01F	Macrolides, lincosamides and streptogramins	36.63	35.00	33.95	-7.31%
J01A	Tetracyclines	22.36	23.23	26.15	16.97%
J01M	Quinolone antibacterials	22.14	21.34	21.53	-2.77%
J01X	Other antibacterials	12.56	11.85	11.17	-11.03%
	Others	20.89	20.62	21.73	4.01%
	Total	323.65	312.40	318.13	-1.70%

Note:
The five most dispensed antimicrobial groups were identified from year 2018 data

*Rounded to two decimal places

†Due to rounding, percentages may not precisely reflect the absolute figures

Results (11) - Ten Most Dispensed Antimicrobials in Non-inpatient Service

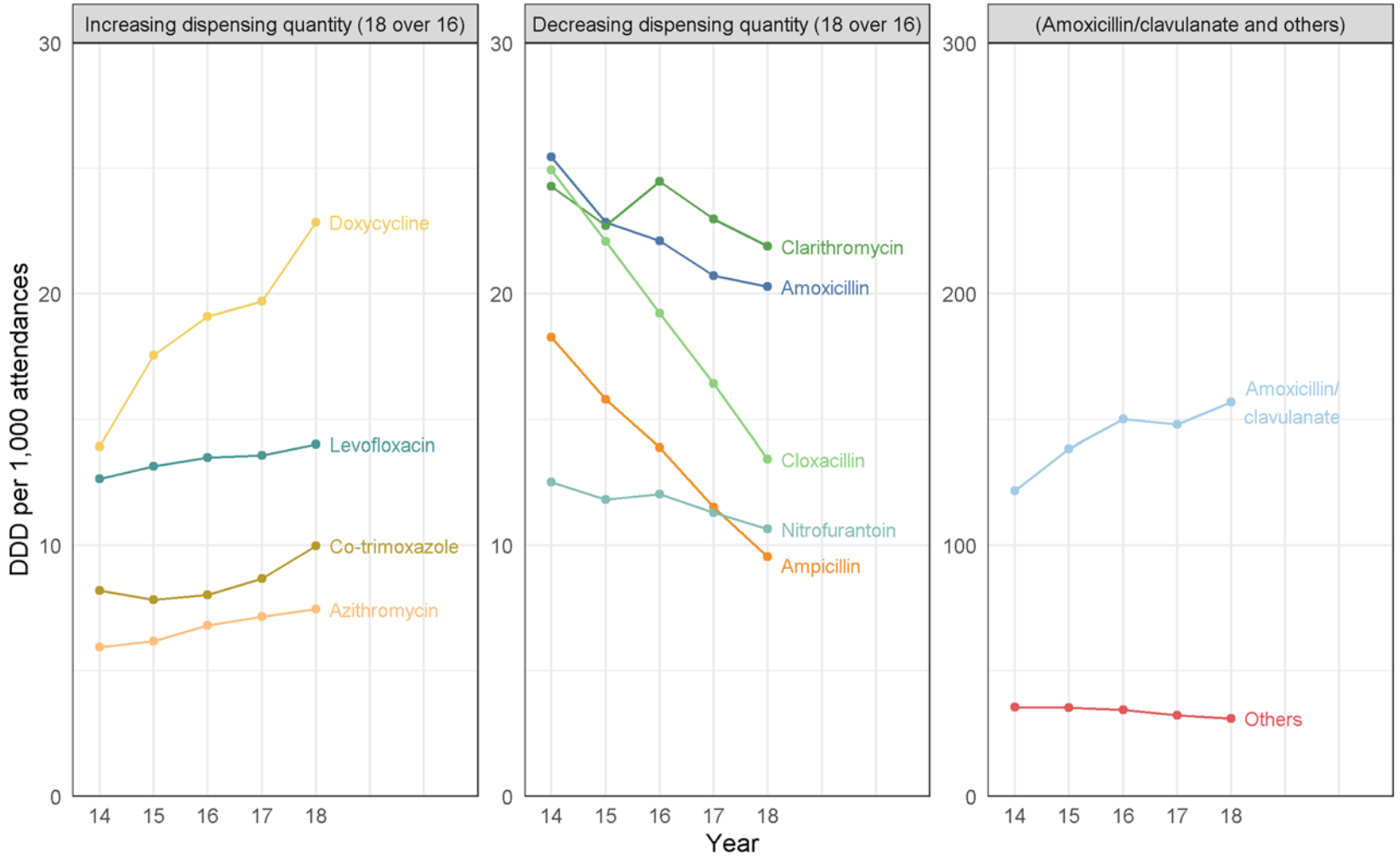
ATC Chemical Substance		DDD per 1,000 attendances			
Code	Description	Year 2016*	Year 2017*	Year 2018*	Percentage change (2018 over 2016)*†
J01CR02	Amoxicillin/clavulanate	150.11	148.04	157.00	4.59%
J01AA02	Doxycycline	19.10	19.70	22.86	19.73%
J01FA09	Clarithromycin	24.48	22.98	21.90	-10.53%
J01CA04	Amoxicillin	22.11	20.73	20.29	-8.22%
J01MA12	Levofloxacin	13.50	13.58	14.02	3.85%
J01CF02	Cloxacillin	19.22	16.42	13.43	-30.14%
J01XE01	Nitrofurantoin	12.05	11.31	10.64	-11.64%
J01EE01	Co-trimoxazole	8.04	8.68	9.98	24.23%
J01CA01	Ampicillin	13.89	11.51	9.54	-31.34%
J01FA10	Azithromycin	6.80	7.16	7.46	9.62%
	Others	34.36	32.28	31.01	-9.76%
	Total	323.65	312.40	318.13	-1.70%

Note:
The ten most dispensed antimicrobials were identified from year 2018 data

*Rounded to two decimal places

†Due to rounding, percentages may not precisely reflect the absolute figures

Results (12) - Ten Most Dispensed Antimicrobials in Non-inpatient Service



Discussion (3) - Non-inpatient Service

- The overall dispensed quantity of antimicrobials in non-inpatient service (in DDD per 1,000 attendances) decreased slightly in 2018 when compared with that of 2016 (-1.70%)
- When stratified by specialty, only Specialist Out-patient (Clinical) was observed with a slight increase by 3.10% in 2018 (vs 2016)
- The dispensed quantity of antimicrobials of both Primary Care (GOPC) and Accident & Emergency were observed with a decrease (in DDD per 1,000 attendances)
- Percentage of attendance with antimicrobials dispensed were dropped in all 3 specialties and led to the drop in all non-inpatient services by 8.49% in 2018 (vs 2016), i.e. fewer patients were prescribed with antimicrobials after attending these specialties service

Results (13) - Broad-spectrum Antimicrobials Dispensed in Non-inpatient Service

	Year 2016	Year 2017	Year 2018	Percentage change (2018 over 2016)[*†]
Antimicrobial dispensed in DDD[‡]	7,000	6,000	7,000	1.25%
DDD per 1,000 attendances[§]	0.42	0.39	0.42	-0.72%

[*]Rounded to two decimal places

[†]Due to rounding, percentages may not precisely reflect the absolute figures

[‡]Rounded to the nearest thousand

[§]Rounded to two decimal places

- Most broad spectrum antimicrobials were prescribed in hospital setting
- Only small quantity of broad spectrum antimicrobials were dispensed in non-inpatient service (0.71% of the total dispensed quantity) as some of the patients might be arranged to receive parenteral antimicrobial therapy at non-inpatient setting when appropriate

Results (14) – Overall Antimicrobials Dispensing in Inpatient Service

Year		Medicine	Surgery	O&T	ICU/HDU	Others	All Inpatient Services
2016	Total DDD of antimicrobials dispensed*	3,823,000	1,345,000	801,000	130,000	1,350,000	7,450,000
	Total number of patient-days*	3,308,000	916,000	785,000	71,000	1,887,000	6,967,000
	DDD per 1,000 patient-days‡	1155.56	1469.44	1019.94	1841.38	715.78	1069.38
2017	Total DDD of antimicrobials dispensed*	4,036,000	1,436,000	821,000	126,000	1,384,000	7,803,000
	Total number of patient-days*	3,464,000	962,000	813,000	70,000	1,905,000	7,214,000
	DDD per 1,000 patient-days‡	1165.14	1492.11	1010.53	1789.96	726.78	1081.69
2018	Total DDD of antimicrobials dispensed*	4,053,000	1,522,000	833,000	128,000	1,374,000	7,909,000
	Total number of patient-days*	3,560,000	992,000	855,000	72,000	1,910,000	7,390,000
	DDD per 1,000 patient-days‡	1138.23	1533.72	973.22	1784.84	719.61	1070.32
Percentage change (18 over 16)§	Total DDD of antimicrobials dispensed‡	6.00%	13.12%	3.93%	-1.66%	1.77%	6.16%
	Total number of patient-days‡	7.62%	8.38%	8.91%	1.45%	1.23%	6.07%
	DDD per 1,000 patient-days‡	-1.50%	4.37%	-4.58%	-3.07%	0.53%	0.09%

*Rounded to the nearest thousand

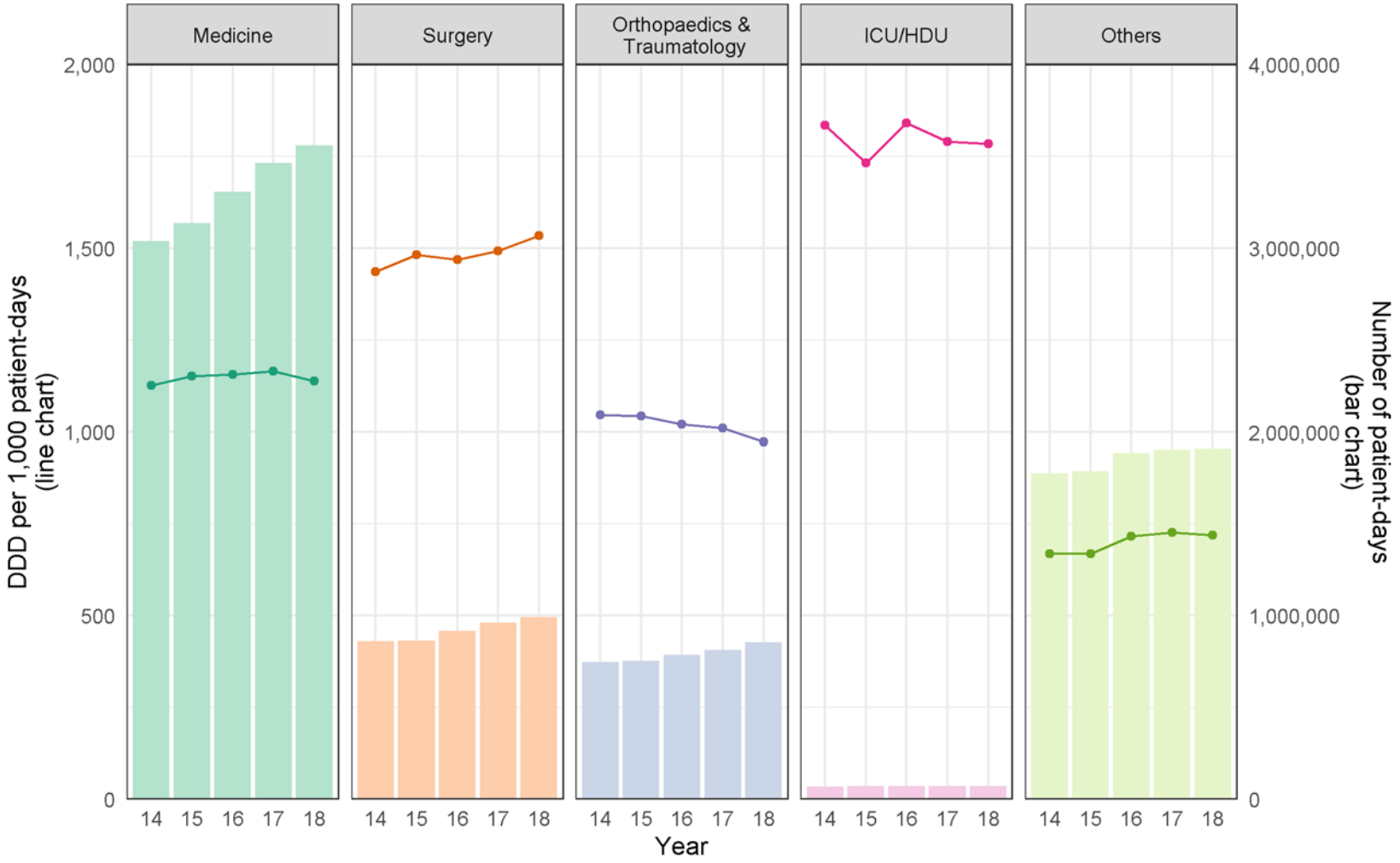
‡Rounded to two decimal places

§Due to rounding, percentages may not precisely reflect the absolute figures

衞生署
Department of Health

Results (15) – Overall Antimicrobials Dispensing in Inpatient Service

衛生防護中心
Centre for Health Protection



衛生署
Department of Health

Discussion (4) - Overall Antimicrobials Dispensing in Inpatient Service by Specialty

- The overall antimicrobials dispensed in inpatient service increased in 2018 when compared with that of 2016 (in DDD)
- However, after considering the increased service volume, the overall quantity of antimicrobials dispensed in terms of DDD/ 1,000 patient-days remained stable for the past few years
- Except Surgery, all specialties of inpatient service showed some decrease or a stable trend of antimicrobials dispensed quantity in 2018 (DDD per 1,000 patient-days) when compared with that of 2016
- Both ICU/HDU and Orthopaedics & Traumatology showed a steady decline in antimicrobial dispensed quantity (DDD per 1,000 patient-days) for the past few years

Results (16) - Five Most Dispensed Antimicrobial Groups in Inpatient Service

ATC Pharmacological Subgroup		DDD per 1,000 patient-days			
Code	Description	Year 2016*	Year 2017*	Year 2018*	Percentage change (2018 over 2016)*†
J01C	Beta-lactam antibacterials, penicillins	689.45	699.94	681.34	-1.18%
J01D	Other beta-lactam antibacterials	117.92	111.24	115.34	-2.19%
J01M	Quinolone antibacterials	93.96	94.15	93.53	-0.46%
J01A	Tetracyclines	40.69	51.13	60.10	47.68%
J01F	Macrolides, lincosamides and streptogramins	52.43	50.24	43.98	-16.11%
	Others	74.93	74.97	76.03	1.48%
	Total	1,069.38	1,081.69	1,070.32	0.09%

Note:
The five most dispensed antimicrobial groups were identified from year 2018 data

*Rounded to two decimal places

†Due to rounding, percentages may not precisely reflect the absolute figures

- Tetracyclines group was the only group among the five most dispensed antimicrobial groups showed an obvious increase (47.68%) over the past few years
- Other groups showed a slight decrease but macrolides, lincosamides and streptogramins group decreased most with -16.11% when compared with that of 2016

衞生署
Department of Health

Results (17) - Ten Most Dispensed Antimicrobials in Inpatient Service

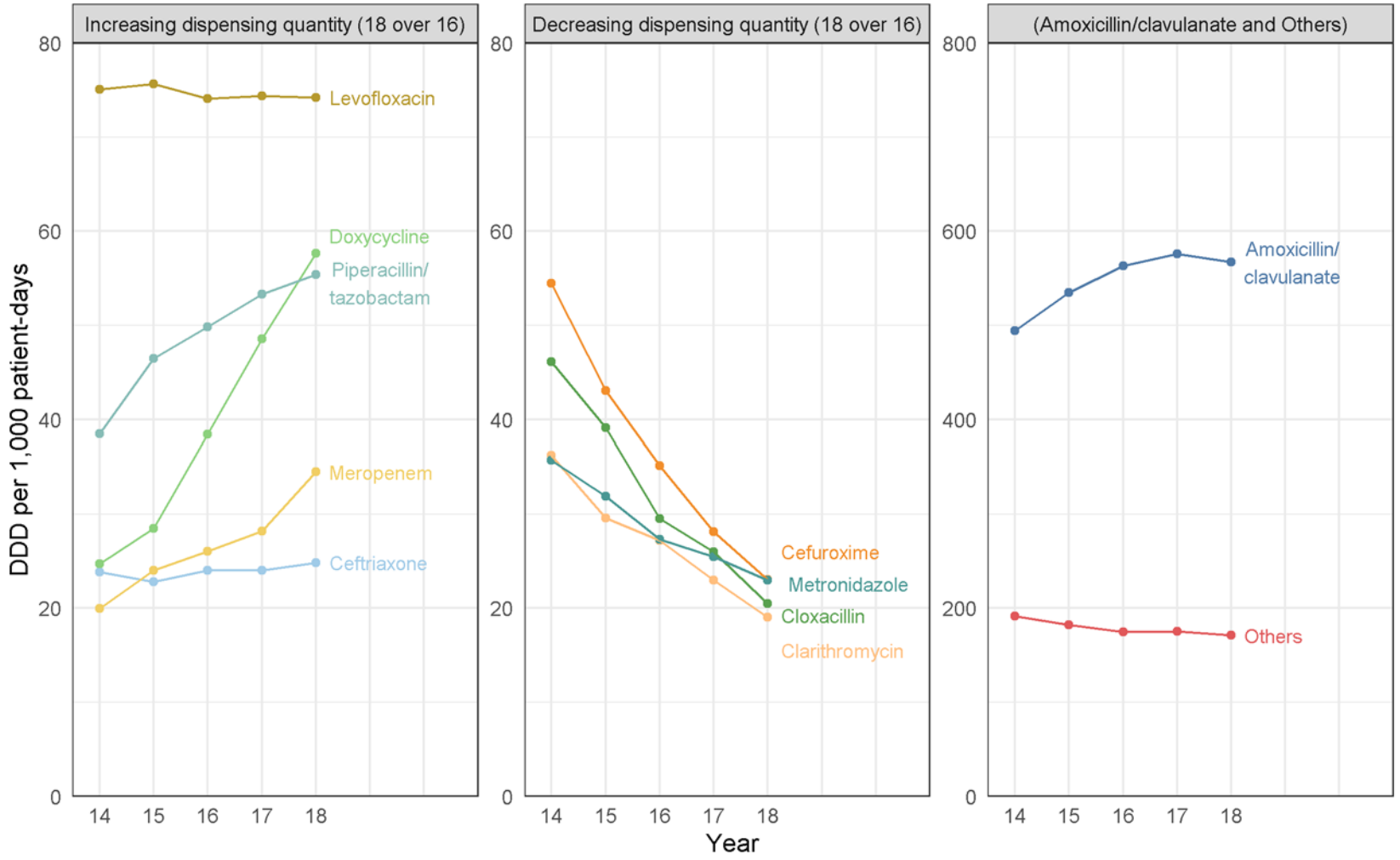
ATC Pharmacological Subgroup		DDD per 1,000 patient-days			
Code	Description	Year 2016*	Year 2017*	Year 2018*	Percentage change (2018 over 2016)*†
J01CR02	Amoxicillin/clavulanate	563.03	575.68	567.29	0.76%
J01MA12	Levofloxacin	74.11	74.36	74.22	0.15%
J01AA02	Doxycycline	38.42	48.54	57.66	50.08%
J01CR05	Piperacillin/tazobactam	49.85	53.31	55.38	11.10%
J01DH02	Meropenem	26.04	28.16	34.48	32.44%
J01DD04	Ceftriaxone	23.98	24.01	24.84	3.57%
J01DC02	Cefuroxime	35.13	28.13	23.02	-34.48%
J01CF02	Cloxacillin	29.51	25.98	20.45	-30.69%
J01FA09	Clarithromycin	27.17	22.95	19.00	-30.05%
J01FA10	Azithromycin	18.78	21.29	18.60	-0.98%
	Others	183.37	179.28	175.37	-4.36%
	Total	1,069.38	1,081.69	1,070.32	0.09%

Note:
The ten most dispensed antimicrobials were identified from year 2018 data

*Rounded to two decimal places

†Due to rounding, percentages may not precisely reflect the absolute figures

Results (18) - Ten Most Dispensed Antimicrobials in Inpatient Service



衛生署
Department of Health

Discussion (5) - Ten Most Dispensed Antimicrobials in Inpatient Service

- Among the top 10 most dispensed antimicrobials in HA inpatient service in 2018, amoxicillin/clavulanate was by far the most dispensed antimicrobial which was 53.00% of overall antimicrobials dispensed quantity
- Doxycycline showed the sharpest increase and contributed to the obvious increase trend of use of tetracyclines group for the past few years
- Increase was also observed with meropenem and piperacillin/tazobactam, which are selected broad spectrum antimicrobials under surveillance
- Over 30% decrease was observed with cefuroxime, cloxacillin and clarithromycin over the past few years

Results (19) - Broad-spectrum Antimicrobials Dispensed in Inpatient Service

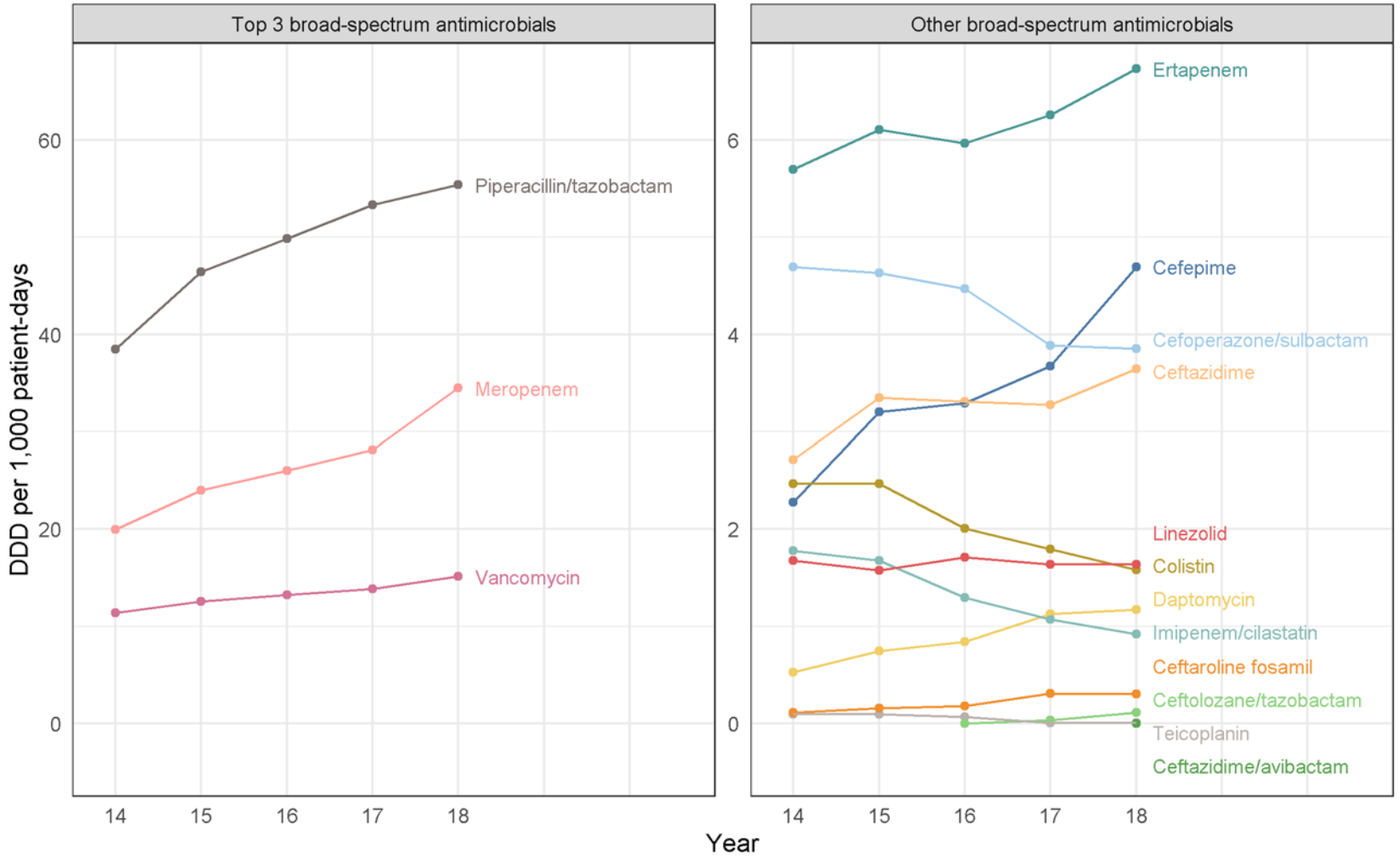
	ATC Chemical Substance		DDD per 1,000 patient-days			
	Code	**Description**	**Year 2016***	**Year 2017***	**Year 2018***	**Percentage change (2018 over 2016)***
Beta-lactam Antibacterials, Penicillins	J01CR05	Piperacillin/tazobactam	49.85	53.31	55.38	11.10%
Other Beta-lactam Antibacterials (Cephalosporins)†	J01DE01	Cefepime	3.29	3.67	4.70	42.70%
	J01DD62	Cefoperazone/sulbactam	4.47	3.88	3.85	-13.89%
	J01DD02	Ceftazidime	3.31	3.27	3.65	10.22%
	J01DI02	Ceftaroline fosamil	0.18	0.31	0.30	67.06%
	J01DI54	Ceftolozane/tazobactam	<0.005	0.03	0.11	4478.03%
	J01DD52	Ceftazidime/avibactam	-	-	<0.005	-
Other Beta-lactam Antibacterials (Carbapenems)†	J01DH02	Meropenem	26.04	28.16	34.48	32.44%
	J01DH03	Ertapenem	5.97	6.26	6.74	12.87%
	J01DH51	Imipenem/cilastatin	1.29	1.07	0.92	-28.90%
Other Antibacterials	J01XA01	Vancomycin	13.26	13.84	15.12	14.06%
	J01XX08	Linezolid	1.71	1.63	1.64	-4.20%
	J01XB01	Colistin	2.01	1.80	1.58	-21.19%
	J01XX09	Daptomycin	0.84	1.13	1.17	39.44%
	J01XA02	Teicoplanin	0.07	<0.005	0.01	-91.53%
		Total	112.28	118.38	129.65	15.46%

*Rounded to two decimal places

†WHO ATC Pharmacological subgroup "other beta-lactam antibacterials (J01D)" is further categorized into cephalosporins and carbapenems groups

衛生署
Department of Health

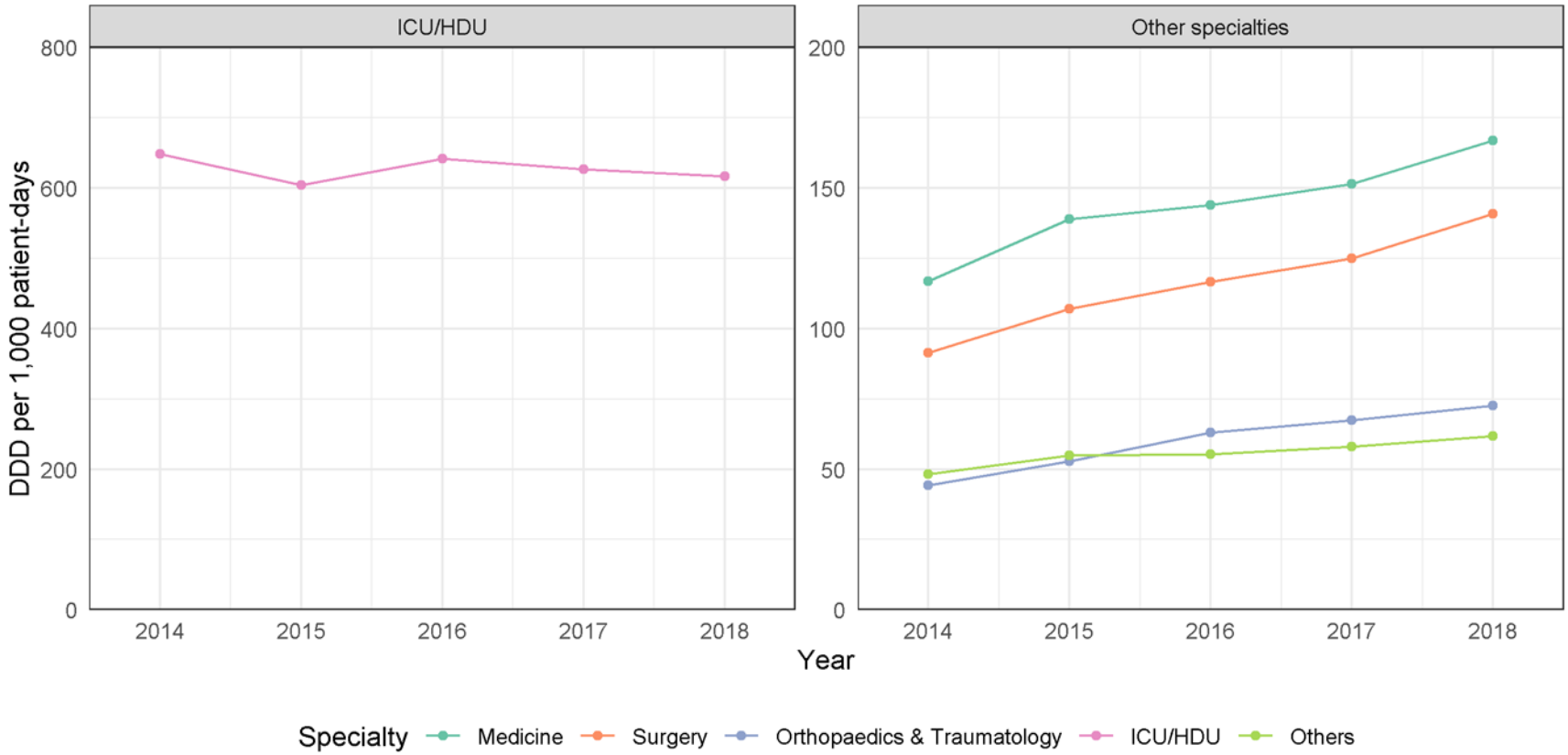
Results (20) - Broad-spectrum Antimicrobials Dispensed in Inpatient Service



Discussion (6) - Broad-spectrum Antimicrobials Dispensed in Inpatient Service

- From 2016 to 2018, both piperacillin/tazobactam and meropenem were the two most dispensed broad spectrum antimicrobials in HA inpatient service
- Together they accounted for about 67.59% (2016) to 69.32% (2018) of the overall dispensed quantity of broad spectrum antimicrobials
- Among the 10 most commonly dispensed antimicrobials in HA Inpatient Service, these two drugs were ranked the fourth and fifth commonest antimicrobials dispensed
- These two broad spectrum antimicrobials have showed a steady increase since 2016
- The same observation was also noted with vancomycin
- Two fifth generation cephalosporins, namely, ceftaroline fosamil and ceftolozane/tazobactam showed rapid increase in use though the absolute dispensed amount were rather small
- Both cefepime and daptomycin showed an increase of about 40% from 2016 to 2018 though they together only accounted for 3.68% and 4.53% of the overall broad-spectrum antimicrobials use in 2016 and 2018 respectively
- Colistin, being considered as the last resort antimicrobial for treating resistant bacterial infections was found to have decreased by 21.19% when compared with that of 2016

Results (21) - Broad-spectrum Antimicrobials Dispensed in Inpatient Service, stratified by Specialty



- When stratified by specialty, all specialties of inpatient service showed a steady trend of increase of use of the overall selected broad spectrum antimicrobials except ICU/HDU

Limitations

- The WHO DDD constants* applied in the surveillance for each antimicrobial may not be aligned with the local practice
- The dispensing data collected did not contain indications (intended use)
- Calculation of DDDs and then the analysis are based on the dosage form† of the antimicrobial if no clearly indicated route of administration‡
- The analysis assumes that amount of antimicrobials dispensed equals to amount of antimicrobials consumed
- These surveillance results cannot be used to judge the appropriateness of use in the absence of the relevant clinical information

* WHO ATC 2018 July version was adopted for DDD calculation
† Common dosage forms include: tablet, solid for oral suspension, injectable, etc.
‡ Common routes of administration include: oral, injection, etc.

Way Forward

- Antibiotic Stewardship Program is a useful tool to regularly remind healthcare workers of judicious use of antibiotics
- It should be strongly advocated and implemented in all healthcare facilities to raise the awareness of the importance of appropriate use of antibiotics to contain the spread of AMR
- Antibiotics are a precious resource for human health and modern medicines
- Every member of the society should make efforts to preserve it effectiveness against bacterial infections

What can I do to combat AMR?

- For General Public
  - Proper use of antibiotics
    - Do not demand antibiotics from your doctor
    - Follow your doctor's advice when taking antibiotics
    - Do not stop taking antibiotics by yourselves even if you are feeling better
    - Do not take leftover antibiotics
    - Do not share your antibiotics with others
    - Do not self-purchase antibiotics without a prescription
  - Practise frequent hand hygiene, especially before eating and taking medicine, and after going to the toilet
  - Ensure your vaccination is up-to-date
  - Maintain cough etiquette, wear a surgical mask if you have symptoms of respiratory infection

What can I do to combat AMR?

- For Healthcare Workers
  - Antibiotics are precious resources and their effectiveness must be preserved to protect us from infections. Healthcare workers play an essential role in preserving them:
    - Prescribe antibiotics in accordance with therapeutic guidelines in consideration of clinical situations
    - Educate your patients
      - To take antibiotics as prescribed and always complete the full course of medication
      - Discuss about the importance of appropriate antibiotic use and the dangers of AMR where appropriate
      - Talk about how to prevent infections and their spread. For example, vaccination, maintain good personal hygiene and hand hygiene
    - Apply best practice of infection prevention and control, and to practise frequent hand hygiene
    - Receive seasonal influenza vaccine

衞生防護中心
Centre for Health Protection
衞生署
Department of Health